

## **REMARKS**

By the present amendment, Claim 12 has been amended. Claims 1-14 remain pending in the application, with Claims 1, 10 and 12 being independent claims. Claims 1, 2, 12 and 14 are rejected under 35 U.S.C. § 102(e) as allegedly being anticipated by El-Malki (U.S. Patent No. 6,947,401 B2).

Applicants appreciate the indication by the Examiner that Claims 10 and 11 are allowed, and that Claims 3-9 and 13 are objected to as being dependent on a rejected base claim, but would be allowable if rewritten in independent form to include all the limitations of the base claim and any intervening claims.

Claim 12 has been amended to spell out the RAP acronym as a regional anchor point.

The Examiner states on page 2 of the Office Action that an oath or declaration by each actual inventor or inventors listing the entire inventive entity has not been submitted. Applicants respectfully submit that a properly executed declaration was filed on August 6, 2003 with the present application.

Submitted herewith are copies of the return postcard stamped by the USPTO indicating the filing of the executed declaration, the executed declaration filed with the present application, and the filing receipt for the present application dated February 26, 2004. Applicants believe the U.S. Patent and Trademark Office (USPTO) improperly scanned, misplaced or otherwise lost the executed declaration filed with the present application on August 6, 2003 because a Notice of Missing Parts has never been issued for the present application. The attached copy of the executed declaration is provided as a courtesy for the USPTO and no fee should be applied.

The present invention relates to a method and apparatus for supporting mobility of a mobile node in a network system including a home agent for managing an address of the mobile node and a plurality of access routers. The method enables the acquiring of a care-of address

(CoA) assigned from a first access router, determining whether the first access router has a regional anchor point (RAP), and transmitting a CoA from a second router to the first access router having the RAP. The apparatus provides a mobile node that determines whether a second access router has an RAP function, and transmits a binding CoA to the second access router containing the RAP function. In the present invention, when a mobile node moves to another access router, any one of a current access router and a previous access router is designated as a RAP and the RAP, being different from a conventional MAP, serves as an anchor point for a mobile node.

El-Malki describes a hierarchical mobility management for wireless networks for routing packets to mobile nodes. Packets are sent from the node communicating with the mobile node to a node associated with the updated address. El-Malki merely relates to the conventional art described from page 1, line 22, to page 5, line 10 of the present application, wherein a MAP can be located in a network or access routers, and HMIPv6 can even be used in a non-hierarchical structure. However, since El-Malki uses a MAP, which is different from the present invention, once a position of the MAP is determined, only the access point routers located in a lower layer of the MAP can use the MAP as an anchor point. Thus, the HMIPv6 can be realized only in a fixed hierarchical network topology, but HMIPv6 satisfying the localized mobility management (LMM) condition without restriction of the network topology cannot be realized. The present invention provides a solution for this problem.

Independent Claim 1 recites, in part, determining by the mobile node whether the first access router provides a RAP function, and transmitting a CoA assigned from a second access router to the first access router by the mobile node that has moved from the first access router to the second access router, when the first access router has a RAP function. Independent Claim 12 recites, in part, a mobile node for determining whether a second access router has a RAP function and transmits a binding message including a first CoA to the second access router if the second access router has a RAP function; and a second router for assigning a second CoA to a mobile station and binding the first CoA from the mobile node with the assigned second CoA upon receiving a binding message from the mobile node.

With respect to Claim 1, the Examiner states that El-Malki discloses, from col. 4, line 61, to col. 5, line 47, and in Fig. 3, a method for supporting mobility of a mobile node in a network system including a home agent for managing an address of the mobile node and a plurality of access routers. In these lines, El-Malki clearly explains that the mobility anchor point function is determined by the mobile node and does not transmit a binding care-of address to a specific access router without first establishing a mobility anchor point on the selected access router. El-Malki fails to teach or reasonably suggest the recitations of Claim 1.

With respect to Claim 12, the Examiner states that this is the apparatus claim for performing the method claim of Claim 1 and is therefore rejected for the same reasons. El-Malki fails to teach or reasonably suggest the recitations of Claim 12.

More particularly, El-Malki fails to teach or reasonably suggest a method for supporting mobility of a mobile node in a network system including a home agent for managing an address of the mobile node and a plurality of access routers, the method including (a) acquiring by the mobile node a care-of address (CoA) from a first access router when the mobile node is located in the first access router; (b) determining by the mobile node whether the first access router provides a regional anchor point (RAP) function; and (c) transmitting a CoA assigned from a second access router to the first access router by the mobile node that has moved from the first access router to the second access router, when the first access router has a RAP function, as recited in Claim 1.

El-Malki also fails to teach or reasonably suggest an apparatus for supporting mobility of a mobile node moved from a second access router to a first access router in a network system including a home agent for managing an address of a mobile node and a plurality of access routers to which the mobile node can move, the apparatus including a first access router for assigning a first CoA to the mobile node; a mobile node for determining whether a second access router has a RAP function and transmits a binding message including the first CoA to the second access router if the second access router has a RAP function; and a second router for assigning a

second CoA to a mobile station and binding the first CoA from the mobile node with the assigned second CoA upon receiving a binding message from the mobile node, as recited in Claim 12.

Furthermore, El-Malki differs from the present invention because El-Malki merely relates to the conventional art described from page 1, line 22, to page 5, line 10 of the present application, wherein a MAP can be located in a network or access routers, and HMIPv6 can even be used in a non-hierarchical structure. However, since El-Malki uses a MAP, which is different from the present invention, once a position of the MAP is determined, only the access point routers located in a lower layer of the MAP can use the MAP as an anchor point. Thus, the HMIPv6 can be realized only in a fixed hierarchical network topology, but HMIPv6 satisfying the LMM condition without restriction of the network topology cannot be realized. The present invention provides a solution for this problem.

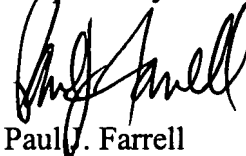
In the present invention, when a mobile node moves to another access router, any one of a current access router and a previous access router is designated as a RAP and the RAP, being different from a conventional MAP, serves as an anchor point for a mobile node.

Accordingly, independent Claims 1 and 12 are allowable over El-Malki.

While not conceding the patentability of the dependent claims, *per se*, Claims 2 and 14 are also allowable for at least the above reasons.

Accordingly, all of the claims pending in the Application, namely, Claims 1-14, are in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicants' attorney at the number given below.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Paul J. Farrell", written over the printed name.

Paul J. Farrell  
Reg. No. 33,494  
Attorney for Applicants

THE FARRELL LAW FIRM  
333 Earle Ovington Blvd., Suite 701  
Uniondale, New York 11553  
Tel: (516) 228-3565  
Fax: (516) 228-8475

PJF/TCS/dr

Attachments: return postcard stamped by the USPTO;  
the executed declaration filed with the present application; and  
the filing receipt for the present application dated February 26, 2004



**PATENT OFFICE DATE STAMP WILL ACKNOWLEDGE RECEIPT OF:**

New U.S. Patent Application of :Kyung-Joo SUH, et al.  
Entitled: **SYSTEM AND METHOD FOR SUPPORTING MOBILITY OF  
MOBILE NODE USING REGIONAL ANCHOR POINT IN  
FUTURE INTERNET**

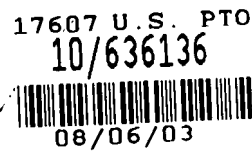
1. Utility Application Data Sheet Under 37 C.F.R. §1.76 (in triplicate)
  2. Utility Patent Application Transmittal
  3. Fee Transmittal for FY 2003(in duplicate)
  4. Check for \$750.00 (filing fee)
  5. Check for \$40.00 (Recordation)
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  7. Recordation Cover Sheet with Assignment
  8. Specification (19pgs), claims (3 pgs.), Abstract (1 pg.), formal drawings (8 pgs.)
  9. Return Postcard
- All submitted Under Certificate of Mailing Under 37 C.F.R. 1.10  
Express Mail No. EV 333227663 US  
Docket: 678-1235 (10958)  
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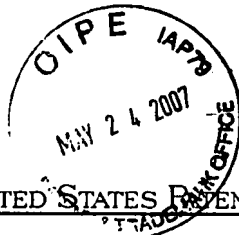
New U.S. Patent Application of :Kyung-Joo SUH, et al. --

Entitled: **SYSTEM AND METHOD FOR SUPPORTING MOBILITY OF  
MOBILE NODE USING REGIONAL ANCHOR POINT IN  
FUTURE INTERNET**

1. Utility Application Data Sheet Under 37 C.F.R. §1.76 (in triplicate)
  2. Utility Patent Application Transmittal
  3. Fee Transmittal for FY 2003(in duplicate)
  4. Check for \$750.00 (filing fee)
  5. Check for \$40.00 (Recordation)
  6. Executed Declaration and Power of Attorney
  7. Recordation Cover Sheet with Assignment
  8. Specification (19pgs), claims (3 pgs.), Abstract (1 pg.), formal drawings (8 pgs.)
  9. Return Postcard
- All submitted Under Certificate of Mailing Under 37 C.F.R. 1.10  
Express Mail No. EV 333227663 US  
Docket: 678-1235 (10958)  
Dated: August 6, 2003



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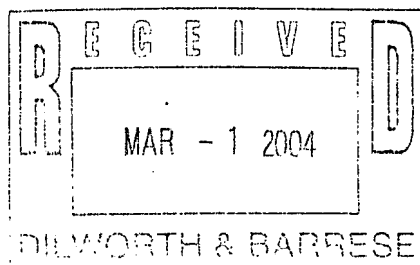


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Paul J. Farrell  
 DILWORTH & BARRESE, LLP  
 333 Earle Ovington Blvd.  
 Uniondale, NY 11553



CONFIRMATION NO. 2802

## FILING RECEIPT



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Receipt is acknowledged of this regular Patent Application. It will be considered in its order and you will be notified as to the results of the examination. Be sure to provide the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION when inquiring about this application. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. If an error is noted on this Filing Receipt, please write to the Office of Initial Patent Examination's Filing Receipt Corrections, facsimile number 703-746-9195. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections (if appropriate).

## Applicant(s)

Kyung-Joo Suh, Seoul, KOREA, REPUBLIC OF;  
 Young-Joo Suh, Pohang-shi, KOREA, REPUBLIC OF;  
 Dong-Hee Kwon, Pohang-shi, KOREA, REPUBLIC OF;  
 Kil-Seok Yang, Pohang-shi, KOREA, REPUBLIC OF;  
 Jae-Myung Jang, Pohang-shi, KOREA, REPUBLIC OF;

## Assignment For Published Patent Application

SAMSUNG ELECTRONICS CO., LTD., KYUNGKI-DO, KOREA, REPUBLIC OF;

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**Title**

System and method for supporting mobility of mobile node using regional anchor point in future Internet

**Preliminary Class**

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